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ABSTRACT

A computer processed sociogram (CPS), using a numberical printout and vectors, is being successfully used by teacher trainees at Lock Haven State College during their student teaching. Mark-sense IBM cards are marked by students and punched by the mark-sense machine; the computer program then analyzes the cards, draws vectors and issues a numerical printout to indicate the social structure of the group. The chief advantage is that the student teacher is spared the tedious task of tabulation, but is provided with information about social relations in the class he teaches. Such information can be used to determine class assignments, promote worthwhile interaction, and improve the overall learning climate. It can also be useful as an indicator of maladjustment, as a group therapy, as a variable in innovative educational programs, and as a determinant of optimum teaching styles. The CPS should also be helpful to psychologists, sociologists, and the military, business, and other groups where interaction is important. (Author/PB)

COMPUTER PROCESSED SOCIOGRAM USING NUMERICAL AND VECTOR PRINTOUTS

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Student teaching at Lock Haven State College requires a practicum each week during a variable length student teaching experience which is scheduled by the college for an eighteen week semester. The student teaching is broken into two nine week sessions of experience with different cooperating teachers, usually at two levels and in different schools.

For each student teaching experience a student is required to reach certain competencies that are regarded as essential for teaching. Included in a competency booklet provided by the college is a section which lists prescribed activities for the student teacher. Two of the following activities must be performed each nine week period:

1. Class profile with information from guidance files.
2. Student teacher's case study of an individual pupil.
3. Sociogram of a class.
4. Participation in at least three social or sports or stage activities to study the pupils' behavior.
5. Individual structural interviews or conferences with student:
   Elementary, home room.
   Secondary, at least five [1].

In order to facilitate a more reliable and valid, as well as less complicated means of calculating and drawing the sociogram, the computer has been employed.

Background

The use of a sociogram for determining social structure has long been considered a practical device; however, due to long hours of tabulation and drawing of sociograms, the device has not been utilized to its full potential.

During the summer of 1971, the writer developed a computer drawn sociogram in which vectors were used to determine the social strata of members of groups. Along with the printout of the vectors, a numerical printout was inserted into the program for convenience in analyzing the data. Through the use of this device a minimal amount of student time was required for the marking of IBM cards and the interpretation of results.

Implementation Of Program

Mark-sense IBM cards were punched with initial numbers, each number indicating the student marking the card, and each student picked three choices of other members of the group with whom he would like to do a certain activity for a positive or negative reading of the sociogram. The students were made aware of which students were assigned which numbers and in turn marked their IBM cards "A," "B," or "C" indicating a first, second, and third choice. The decks of cards were then punched by the mark-sense machine to indicate choices made, friends or non-friends. These cards were analyzed by the computer program and vectors were drawn, together with a numerical printout to indicate the social structure of the group.

Beginning with the fall semester, 1971, the computer-processed sociogram has been utilized by the writer in his position as a supervisor of student teachers. The fall semester, 1971; the spring semester, 1972; and the fall semester, 1972; have provided an opportunity for the writer to have all of his student teachers use the computerized sociogram at least once each nine week period.

Groups of people may be analyzed in at least two separate ways by controlling the distribution of numbered IBM cards as is indicated in the Junior High School Student Teaching Sociogram and the Senior High School Student Teaching Sociogram in the appendix. In the Junior High School Sociogram, numbers one through fifteen represent boys of the group and numbers sixteen through thirty-five represent girls. It will be noticed when looking at the sociogram drawn by an IBM 1627 plotter that since boys' numbers and girls' numbers were

placed in consecutive order, both as planned by the teacher and as controlled by the computer, there is a noticeable blank space vertically on the sociogram between points P1-P35 and P15-P16, showing at a glance that an interest in the opposite sex has not yet developed--at least not overtly.

The question asked the students at the junior high school level was "What three classmates would you like to work with on a committee in American Cultures class?" Part of the analyzation of the sociogram might be as follows:

> The boy who has the reputation of class clown or trouble-maker was only chosen by four other students, one of which was a girl. Therefore, one may be able to surmise that when serious school work is at hand the class would rather be disassociated from him.
>
> Only two boys were chosen by one class member. The one student is a very good student and seems to get along well with his classmates; the other student is a very poor student. The students may be aware of this, therefore, they would not accept him to work on a committee with them.
>
> There is one definite clique of boys; however, there does not appear to be as tight a clique among the girls.
>
> In looking for a leader, there really is no obvious leader among the boys; however, there are two definite class leaders among the girls.

This information can now be used by the teacher to help determine and/or reinforce the knowledge of social relationships in his class, thereby helping to determine class assignments, to generally promote worthwhile interaction, and to improve the learning climate in the classroom.

The second method of controlling the distribution of students on the sociogram is by random distribution of IBM cards to be marked by students. This method is demonstrated in the second sociogram shown in the appendix. In this sociogram taken at the senior high school level the question asked was "If you were going to study, who are the three people, in this class, you would want to study with?" As can be seen in the sociogram, P13 was chosen by about half of the group indicating that she is the leader of the group. Additional assumptions can be made from the drawing; however, in order to analyze it more completely and in a meaningful way, more information would be needed about the group.

Other student teacher supervisors and teachers in the campus laboratory school at Lock Haven State College have taken advantage of this method to analyze class structure. This has provided an opportunity for the computerized sociogram to be used in practical situations a minimum of 150 times with reported excellent results.

Potential Use

Potential uses for the Computer Processed Sociogram for student teachers include: (a) Student teachers could write two sets of questions for any class where a sociogram is desirable, one to be used in preparing a sociogram the second week of the student teaching experience and one to be used in preparing a sociogram during the eighth week of a nine week experience. With the use of the initial sociogram, isolates and leaders could be determined, with lessons and other activities then planned accordingly. In comparing the results of the two sociograms, the student teacher would observe if any improvement in social relationships had taken place in his classroom during the six week period that had elapsed. (b) Student teachers could write one set of questions and use it in preparing a sociogram during the second week of a student teaching experience. The resulting data could then be used in determining experiences for their class(es) during the student teaching experience.

In addition, the computer processed sociogram could be of considerable value when used by school and/or clinical psychologists, sociologists, the military, business, or any group where interaction is vital.

School and/or clinical psychologists could use the sociogram as (a) an indicator to help identify children with social and/or emotional maladjustment, (b) an aid in group therapy, (c) a variable in assessing the effect of innovative educational programs, and (d) an indicator of teaching styles--as Flander's interaction analysis or other indicators.

Summary

The computer processed sociogram, using a numerical printout and vectors, has proven to be quite successful since its introduction in the fall of 1971 to student teachers at Lock Haven State College. Improved teaching practices have resulted since student teachers have been able to easily determine the social structures of their classes.

No checks have been made on the reliability or validity of this type of sociogram; however the writer believes it to be the same as the hand computed and drawn instrument.

Effective use of the computer processed sociogram could improve social relationships in business, industry, and the military. Since the computer eliminates long hours of laborious drawing of the sociogram, it can now be used effectively in any situation where there is need for constructive group interaction.

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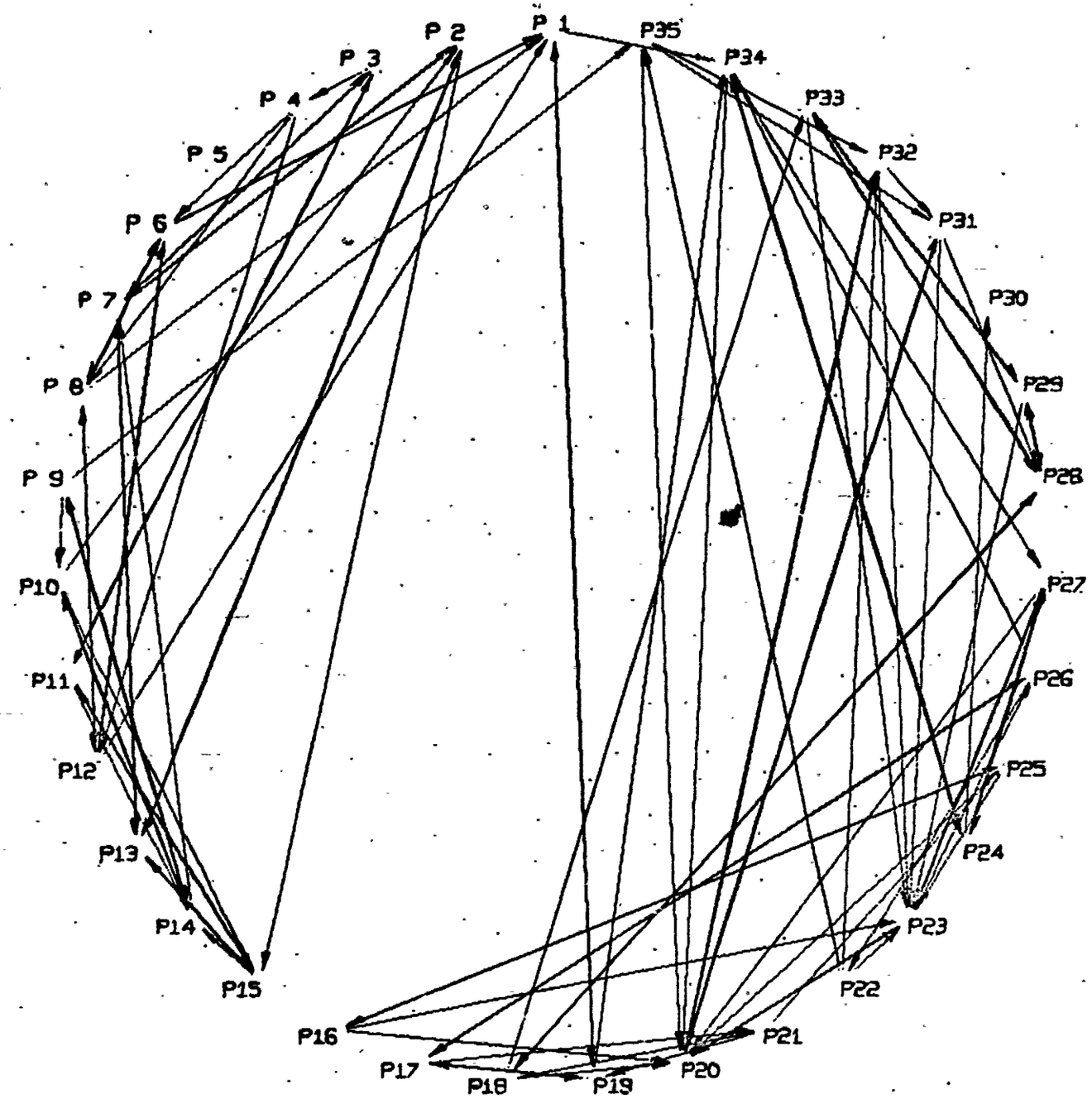
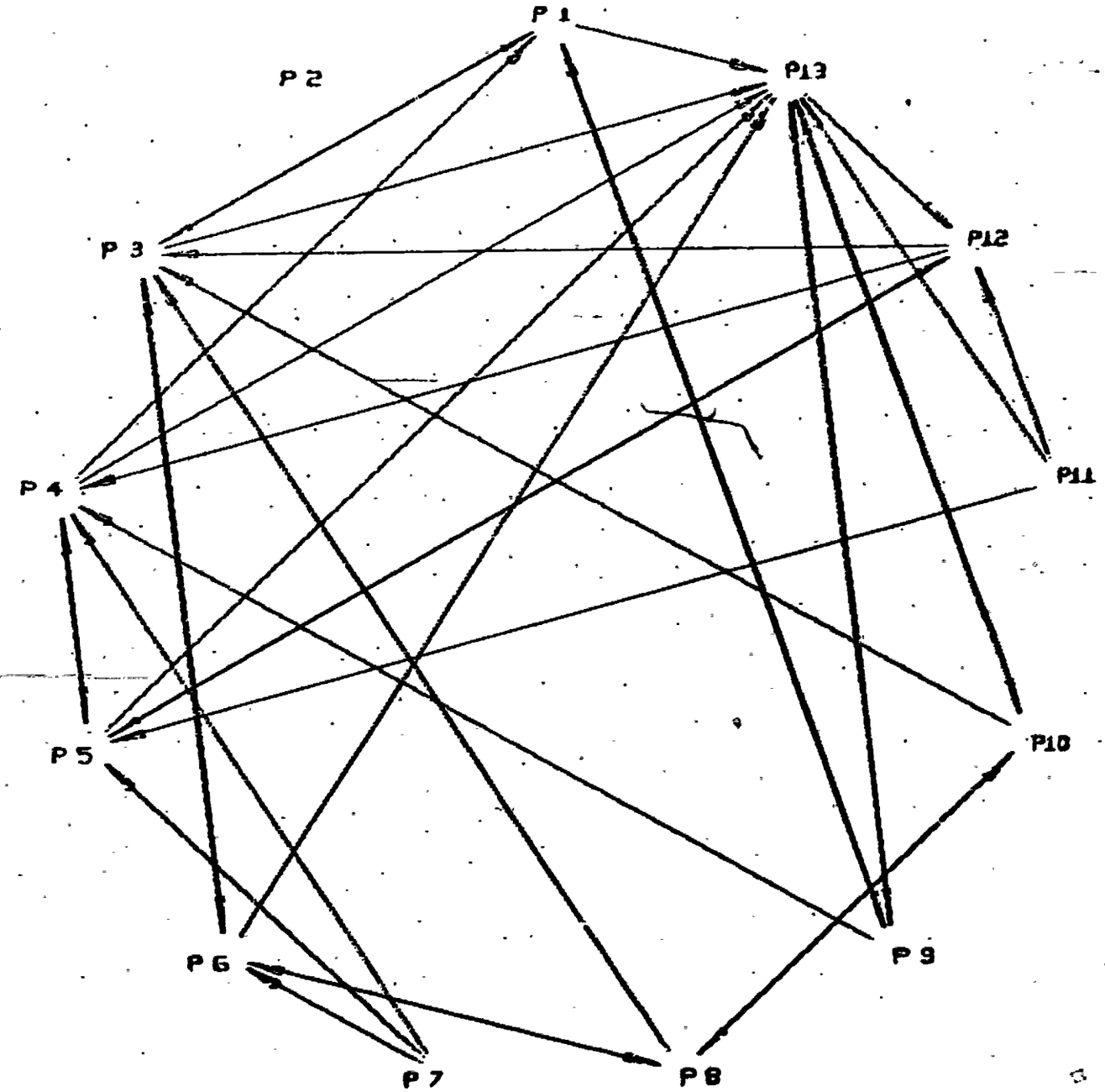


SOCIOGRAM JUNIOR HIGH SCHOOL STUDENT TEACHING



SOCIOGRAM SENIOR HIGH SCHOOL STUDENT TEACHING

SOCIOGRAM SENIOR HIGH SCHOOL STUDENT TEACHING

P 1
CHOSE- P 3 P 9 P13
WAS CHOSEN BY- P 3 P 4 P 9

P 2
CHOSE-NONE
WAS CHOSEN BY-NONE

P 3
CHOSE- P 1 P 6 P13
WAS CHOSEN BY- P 1 P 6 P 8 P10 P12

P 4
CHOSE- P 1 P 5 P13
WAS CHOSEN BY- P 5 P 7 P 9 P12

P 5
CHOSE- P 4 P12 P13
WAS CHOSEN BY- P 4 P 7 P11 P12

P 6
CHOSE- P 3 P 8 P13
WAS CHOSEN BY- P 3 P 7 P 8

P 7
CHOSE- P 4 P 5 P 6
WAS CHOSEN BY-NONE

P 8
CHOSE- P 3 P 6 P10
WAS CHOSEN BY- P 6 P10

P 9
CHOSE- P 1 P 4 P13
WAS CHOSEN BY- P 1 P13

P10
CHOSE- P 3 P 8 P13
WAS CHOSEN BY- P 8 P13

P11
CHOSE- P 5 P12 P13
WAS CHOSEN BY-NONE

P12
CHOSE- P 3 P 4 P 5
WAS CHOSEN BY- P 5 P11 P13

P13
CHOSE- P 9 P10 P12
WAS CHOSEN BY- P 1 P 3 P 4 P 5 P 6 P 9 P10 P11